

CLASS XII

SAMPLE PAPER

COMPUTER SCIENCE(083)

Time: 3Hours

Maximum Marks: 70

Note. (i) All questions are compulsory.
(ii) Programming Language: C++

1.(a) Give the difference between the type casting and automatic type conversion .Also, give a suitable C++ code to illustrate both. 2

(b)Write the names of the header files to which the following belong: 2

(i) strcmp () (ii) sin () (iii) exp () (iv) isupper ()

(c) Rewrite the following program after removing syntactical error(s) if any. Underline each correction. 2

```
#include [iostream.h]
class MEMBER
{
    int Mno;float Fees;
    PUBLIC:
        void Register(){ cin>>Mno>>Fees;}
        void Display{ cout<<Mno<<" : "<<Fees<<endl;}
};
void main()
{
    MEMBER M;
    Register();
    M.Display();
}
```

(d) Find the output of the following program; 3

```
#include<iostream.h>
#include<ctype.h>
void main( )
{
    char TEXT1[ ] = "Cbse@Board!";
```

```

for(int I=0; TEXT1 [I]!='\0';I++)
{
    if(!isalpha(TEXT1[I]))
        TEXT1[I]='*';
    else if(isupper(TEXT1 [I]))
        TEXT1[I]=TEXT1[I]+1;
    else    TEXT1[I] = TEXT1[I+1];
}
cout<<TEXT1;
}

```

(e) Find the output of the following program:

3

```

#include<iostream.h>
#include<ctype.h>

#include<conio.h>
void ChangeIt(char Text[],char C)
{
    for(int k=0;Text[k]!='\0';k++)
    {
        if(Text[k]>='F' && Text[k]<='L')
        {
            Text[k]=tolower(Text[k]);
        }
        else if(Text[k]=='E' || Text[k]=='e')
        {
            Text[k]=C;
        }
        else if(k%2==0)
        {
            Text[k]=toupper(Text[k]);
        }
        else
        {
            Text[k]=Text[k-1];
        }
    }
}
void main()
{
    clrscr();
}

```

```
char OldText[]="pOwERAlone";
ChangeIt(OldText,'%');
cout<<"New TEXT:"<<OldText<<endl;
getch();
}
```

(f) In the following program, if the value of N given by the user is 20, what maximum and minimum values the program could possibly display? 2

```
#include<stdlib.h>
#include<iostream.h>
void main( )
{
    int N,Guessnum;
    randomize( );
    cin>>N;
    Guessnum=random(N-10)+10;
    cout<<Guessnum<<endl;
}
```

2 (a) What do you understand by Data Encapsulation and Data Hiding? Also, give a suitable C++ code to illustrate both. 2

(b) What is polymorphism? Explain with example. 2

(c) What is Actual parameter and formal parameter in C++? 2

(d) Define a class FLIGHT in C++ with following description: 4

Private Members:

- A data member Flight number of type integer
- A data member Destination of type string
- A data member Distance of type float
- A data member Fuel of type float
- A member function CALFUEL () to calculate the value of Fuel as per the following criteria :

Distance	Fuel
<=1000	500
more than 1000 and <=2000	1100
more than 2000	2200

Public Members:

- " A function FEEDINFO() to allow user to enter values for Flight Number, Destination, Distance & call function CALFUEL() to calculate the quantity of Fuel
- " A function SHOWINFO() to allow user to view the content of all the data members.

3 a) A Class student has three data members: name, roll number, marks of 5 subjects and member function to assign streams on the basis of table given below:

Average Marks	Stream
96% or more	Computer Science
91%-95%	Mathematics
86%-90%	Physics
81%-85%	Chemistry
76%-80%	Biology
71%-75%	English

Declare the class student and define the member function. 4

(b) An array S [40][30] is stored in the memory along the row with each of the element occupying 2 bytes, find out the memory location for the element S[20][10],if the Base Address of the array is 5000.

4

(c) Find the output of the following program: 2

```
#include <iostream.h>
void Changethecontent(int A[ ],int count)
{
    for(int i=1;i<count;i++)
        A[i-1]+=A[i];
}
void main()
{
    int A[ ]={3,4,5},B[ ]={10,20,30,40},C[ ]={900,1200};
    Changethecontent(A,3);
    Changethecontent(B,4);
    Changethecontent(C,2);
}
for(int L=0;L<3;L++)    cout<<A[L]<<'f';
cout<<endl;
for(L=0;L<4;L++)    cout<<'f';
cout<<endl;
for(L=0;L<2;L++)    cout<<C[L]<<'f';
}
```

4. a) What is the difference between Object Oriented Programming and Procedural Programming?

2

b) What is the difference between an object and a class? 2

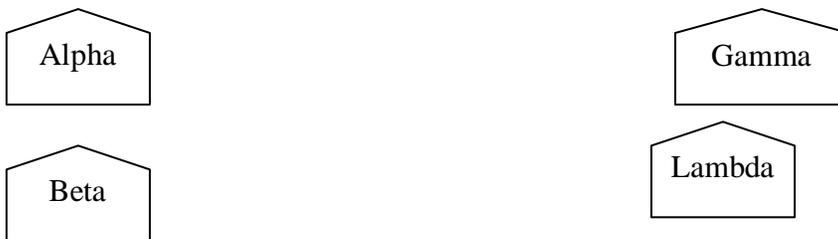
c) An array VAL[1...15][1...10] is stored in the memory with each element requiring 4 bytes of storage. If the base address of the array VAL is 1500, determine the location of VAL[12][9] when the array VAL is stored (i) Row wise (ii) Column wise. 6

5. **a)** What is the difference between Local Variable and Global Variable? Illustrate it. 2
b) Differentiate between the post-increment and pre-increment operators. Also, give a suitable C++ code to illustrate both. 2
6. **(a)** State and verify Distribution Law in Boolean algebra. 2
(b) Draw a Logical Circuit Diagram for the following Boolean Expression: 2
 $X' \cdot (Y' + Z)$
(c) Write the POS form of a Boolean function G, which is represented in a truth table as follows: 1

P	Q	R	G
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

- (d)** Reduce the following Boolean expression using k-map: 3
 $F(A,B,C,D) = \sum(0,1,2,4,5,8,9,10,11)$
7. **(a)** What is the difference between LAN and WAN? 2
(b) What do you mean by IP address? How is it useful in Computer Security? 2
(c) Expand the following terms: 3
a) GSM b) HTML c) XML d) HTTP e) TCP/IP f) FTP
(d) What is a network? What are the benefits of networks? 3
(e) Knowledge Supplement Organization has set up its new centre at Mangalore for its office and web based activities. It has four buildings as shown in the diagram below:

4



Center to center distance between various buildings

Number of Computers

Alpha to Beta	50m
Beta to Gamma	150m
Gamma to Lambda	25m
Alpha to Lambda	170m
Beta to Lambda	125m
Alpha to Gamma	90m

Alpha	25
Beta	50
Gamma	125
Lambda	10

- i) Suggest a cable layout of connections between the buildings
- ii) Suggest the most suitable place (i.e. building) to house the server of this organization with a suitable reason.
- iii) Suggest the placement of the following devices with justification:
 - i. Repeater
 - ii. Hub/Switch
- iv) The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?

Mr. Vijay Malik (PGT Computer Science)

Email-vjmalik3@gmail.com

Mobile-9991073416